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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,670	07/30/2003	Kazutoshi Onozawa	60188-602	6503

7590 07/20/2005

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EXAMINER

MENEFEE, JAMES A

ART UNIT	PAPER NUMBER
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2828

DATE MAILED: 07/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No. 10/629,670	Applicant(s) ONozawa ET AL.	
	Examiner James A. Menefee	Art Unit 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 15-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/30/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of group I, claims 1-14, in the reply filed on 5/11/2005 is acknowledged. Claims 15-17 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Hwu et al. (US 6,259,713).

Regarding claim 1, Hwu discloses a semiconductor laser comprising a substrate 30 having a plurality recess portions 26 in its principal surface, a plurality of semiconductor laser

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chips 22 each disposed in one of the recesses, where the laser chips are facet emitting types in which a beam emits from a facet, and the recess portions are formed so that the respective emission directions of the chips are aligned.

Regarding claim 8, the lasers 22 may emit identical light in both front and rear directions.

Claims 1, 7, 9, 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Smith et al. (US 5,824,186).

Regarding claim 1, Smith discloses a device comprising a substrate including a plurality of recessed portions, and plurality of semiconductor chips each disposed in the recess portions, where the chips emit light from the top facet (note that while applicant's invention appears drawn to edge emitting devices, "facet emitting type" does not preclude surface emission), and the recess portions are formed so that the emission directions are aligned. See Figs. 7-10. The invention may be applied to lasers, col. 1 lines 28-32.

Regarding claim 7, Smith discloses that various shapes may be used for the devices; in certain of these shapes (e.g. kidney or T-shape), the front and back sides will be different.

Regarding claim 9, Smith discloses recess electrodes and contacts on the chips in order to electrically contact the recess electrodes.

Regarding claim 10, Smith discloses that the various devices may have different shapes and different recesses.

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Claims 1-7, 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Song et al. (US 6,347,103). See especially Figs. 7A-7B and the discussion thereof, though the whole document is relevant.

Regarding claim 1, Song discloses a semiconductor laser comprising a substrate having a plurality of recessed portions (LD site) in its principal surface, a plurality of semiconductor laser chips 23,24 each disposed in the recess portions, wherein the chips are facet emission type in which a laser beam is emitted from a facet, the recessed portions are formed so that respective directions of emission of the lasers are aligned.

Regarding claims 2-3, the lasers having different wavelengths, thus different optical outputs. See col. 5 lines 66-67.

Regarding claims 4-6, there are at least two notches through which the emitted portions are exposed, the notches being depressions that reach the bottom of the recesses. See beam lines in Fig. 7B

Regarding claim 7, while the shape of the laser is not explicitly discussed, it is inherent that since the lasers are only emitting from one end then there must be some difference in the facets and therefore a difference in shape.

Regarding claim 9, there is not explicitly disclosed a chip electrode and recess electrode for electrically contacting the laser. However, such features are inherent in Song's device. Song's laser diodes are electrically pumped and therefore must necessarily include the chip electrodes as claimed in order to operate. Furthermore, Song's substrate is made of silicon, and therefore cannot in and of itself provide the electrical connection. Therefore there must be some form of

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electrode on the submount. In order to form the requisite electrical connection, there will be an electrode in the recess.

Claims 13-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Schatz (US 6,780,696). See Fig. 3-1.

Regarding claims 13-14, Schatz discloses a device comprising a substrate 302 having a plurality of recessed portions, and a plurality of chips 307 disposed in the recess portions, wherein an electrode is formed on the face of the chips 307 (inherent, necessary for the device so that it may be electrically operated), and a recess electrode 304 that is formed on a bottom of each recess, and a portion extends beyond the principal surface of the substrate. The elements 307 may be a laser. Col. 13 line 20. The electrode goes into plural recesses and therefore is shared.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Song in view Nemoto (US 6,643,310). Song discloses the limitations of the parent claims as shown above. It is not disclosed that the lasers differ in plan configuration (in accordance with wavelength or output in claims 11-12) and that the plan configuration of the recess portions vary according to the laser shapes. Nemoto teaches that in a multiple laser multiple wavelength laser

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system (such as the present invention) the lasers may differ in plan configuration in accordance with their wavelength and thus with their outputs. It would have been obvious to one skilled in the art to make the lasers of different plan configuration based on output/wavelength, so that plan configuration (i.e. cavity length in Nemoto) may be optimized for each particular laser/wavelength used, as taught by Nemoto. See col. 2 lines 41-48. While Nemoto is drawn to side by side lasers, the principal is equally applicable to the lasers of Song.

The recesses of Song are made for aligning the lasers, therefore the recesses will necessarily be formed in accordance to the laser shapes. If the laser shapes are different, as deemed obvious above, then the recess shapes will also be different so that the different lasers may fit therein.

Conclusion

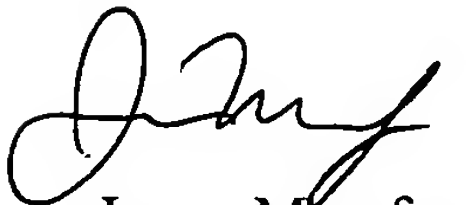
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Onozawa (US 6,790,692) discloses a similar device, but does not use recesses in the substrate, and teaches away from recesses in using a template on the substrate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Menefee whose telephone number is (571) 272-1944. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



James Menefee
July 11, 2005